

AMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

1 (previously presented) A magnetic sensor, comprising  
2 a first magnetic shield layer, having a raised portion and first and second  
3 laterally opposed recessed portions extending laterally there from;  
4 a magnetoresistive sensor formed above said raised portion of said first  
5 magnetic shield layer, said magnetoresistive sensor having an anti-parallel  
6 coupled self pinned layer, and having a free magnetic layer;  
7 first and second compressive layers formed above said first and second  
8 recessed portions of said shield layer; and  
first and second hard magnetic bias layers formed above said first and second  
compressive layers; and  
third and fourth compressive layers comprising Rh formed above said first and  
second hard bias layers.

1 2. (Original) A magnetic sensor as in claim 1, wherein said anti-parallel pinned  
2 layer includes first and second ferromagnetic layers having a positive  
3 magnetostriction separated by anti-parallel coupling layer, and wherein pinning of  
4 said self pinned layer is assisted by a combination of magnetostriction and  
5 magnetostatic coupling between said first and second ferromagnetic layers.

1 3. (Original) A magnetic sensor as in claim 1, wherein said self pinned layer is  
2 pinned without the assistance of exchange coupling to an antiferromagnetic  
3 material.

1 4. (Cancelled)

1 5. (Cancelled) A magnetic sensor as in claim 1 further comprising first and second  
2 layers of hard magnetic material formed over said first and second compressive  
3 layers, and first and second metallic layers formed over said first and second  
4 layers of hard magnetic material.

1 6. (cancelled)

1 7. (previously presented) A magnetic sensor as in claim 1 further comprising first  
2 and second hard magnetic layers formed above said recessed portions of said  
3 shield layer, said first and second hard magnetic layers comprising CoPt, and  
4 further comprising first and second CrMo seed layers.

1 8. (previously presented) A magnetic sensor as in claim 1 further comprising first  
2 and second hard magnetic layers formed above said recessed portions of said  
3 shield layer, said first and second hard magnetic layers comprising CoPtCr and  
4 further comprising first and second Cr seed layers.

- 1 9. (Original) A magnetic sensor as in claim 1 wherein said first and second  
2 compressive layers each have a thickness of at least 200 angstroms.
- 1 10. (Original) A magnetic sensor as in claim 1 wherein said first and second  
2 compressive layers each have a thickness of at least 750 angstroms.
- 1 11. (Original) A magnetic sensor as in claim 1 further comprising an insulating layer  
2 disposed between said anti-parallel pinned layer and said free magnetic layer.
- 1 12. (Original) A magnetic sensor as in claim 1 further comprising an electrically  
2 conductive layer disposed between said anti-parallel pinned layer and said free  
3 magnetic layer.
- 1 13. (previously presented) A magnetic sensor as in claim 2 wherein said first and  
2 second ferromagnetic layers comprise a material having a positive  
3 magnetostriction.
- 1 14. (Original) A magnetic sensor as in claim 1 wherein said shield layer is in  
2 electrical communication with said anti-parallel pinned layer.
- 1 15. (Original) A magnetic sensor as in claim 1 further comprising an electrically  
2 insulating layer disposed between said shield and said anti-parallel pinned layer.

1 16. (previously presented) A magnetic sensor as in claim 2 wherein at least one of  
2 said ferromagnetic layers of said pinned layer comprises CoFe.

1 17. (Original) A magnetic sensor as in claim 1 wherein said first and second  
2 compressive layers have a thickness of at least 17 angstroms.

1 18. (Cancelled)

1 19. (Cancelled)

1 20. (cancelled)

1 21. (cancelled)

1 22. (cancelled)